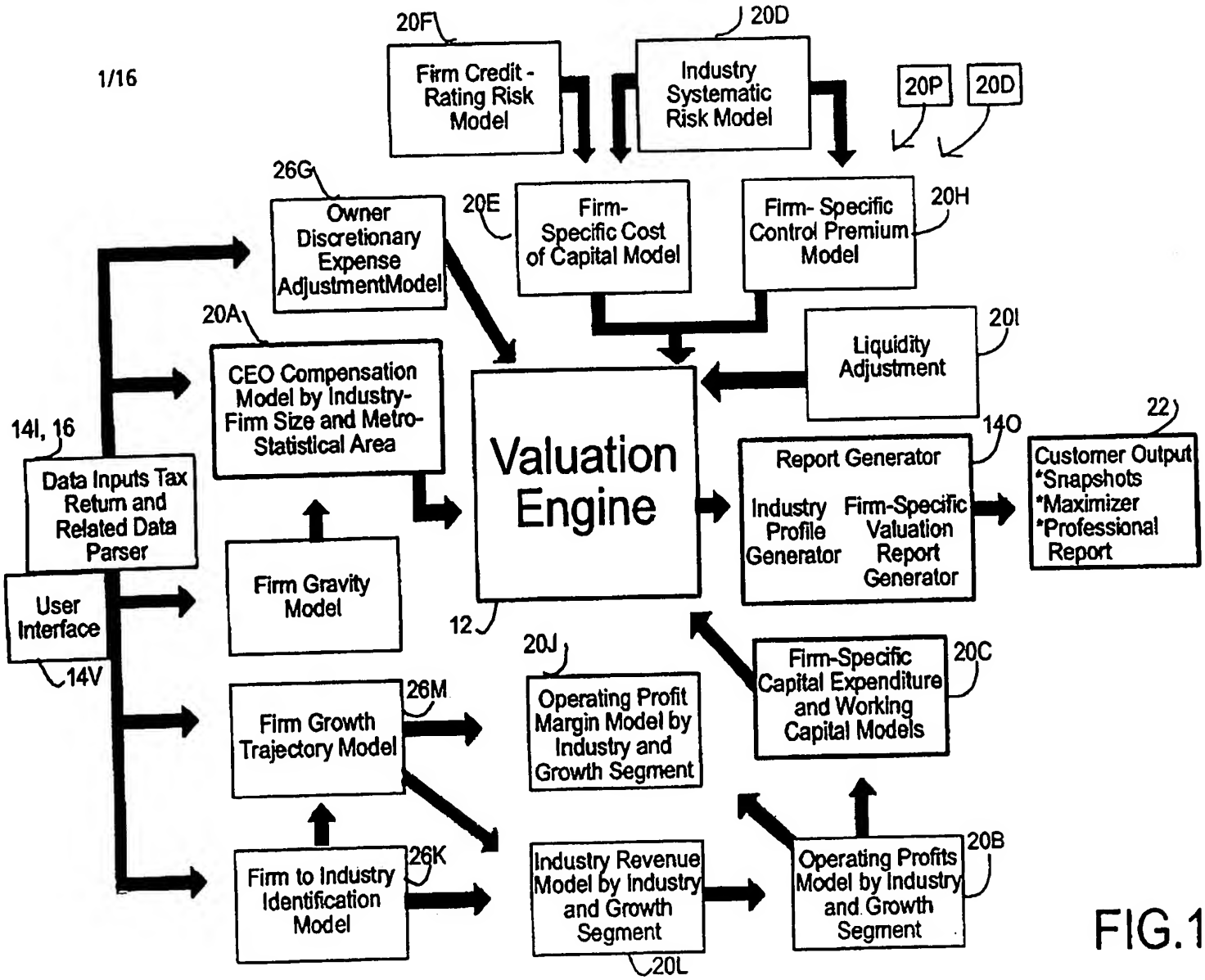

FIG.1

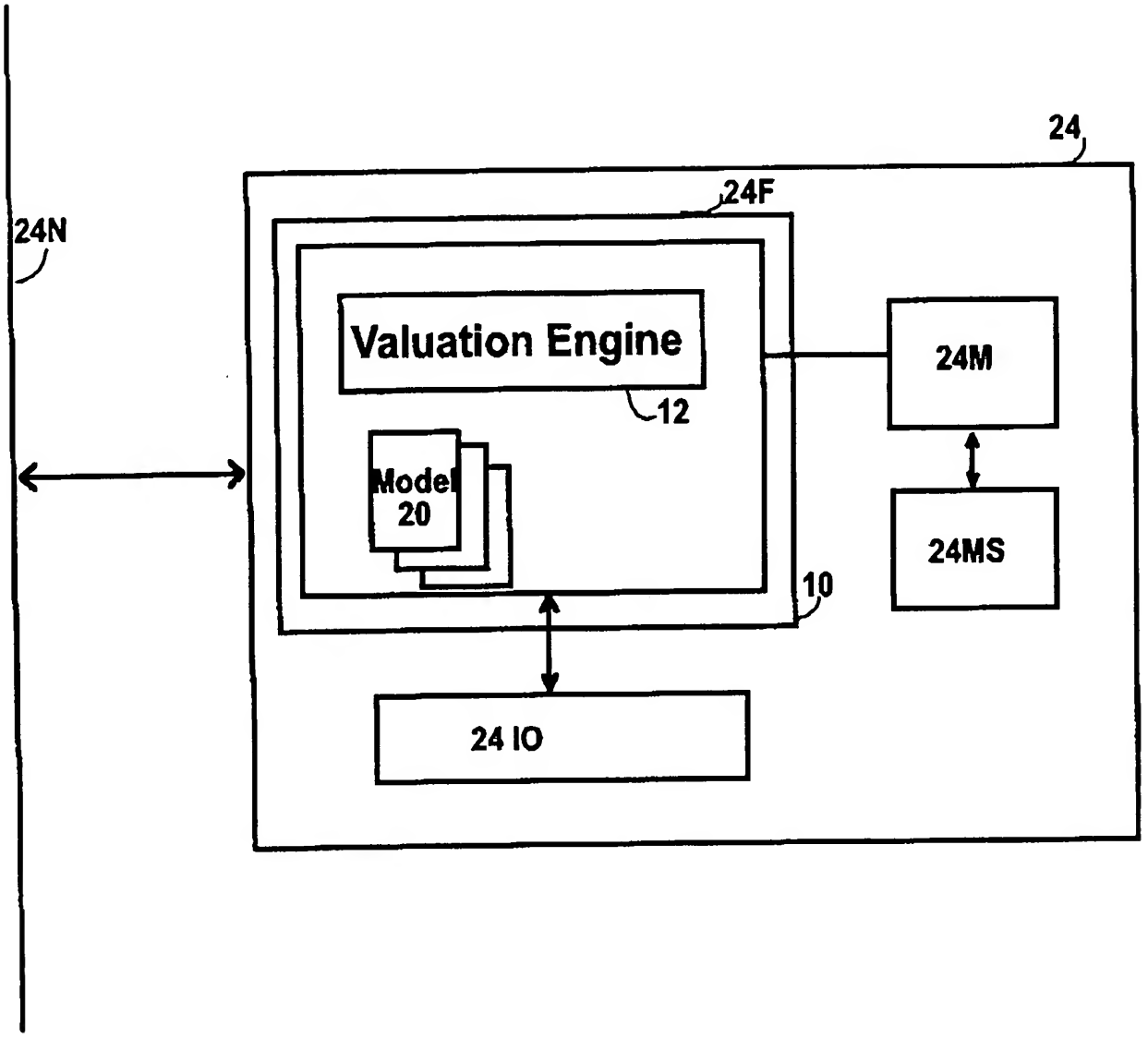

FIG. 2

Betas for Selected Components of NAICS:
Household Appliance Manufaturing

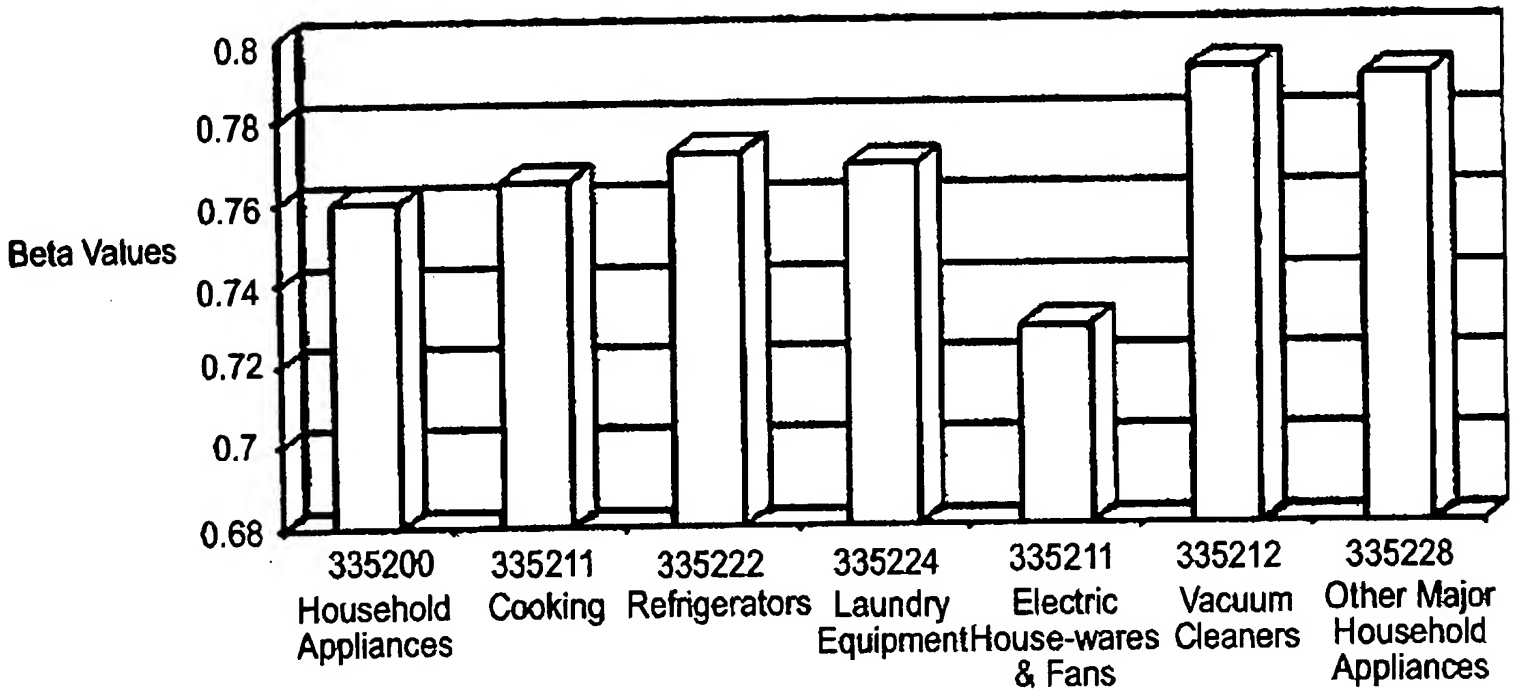

FIG. 3

$$Beta_i = Beta_I (1-\omega_i)$$

$$\omega_i = 1-(OP_i/OP_I)*(\sigma_i/\sigma_I)$$

where:

- $Beta_I$ = *aggregate industry Beta*
- OP_i = *average growth index in operating profits for bizownerHQ sector*
- OP_I = *average growth index in operating profits for aggregate sector*
- (σ_i/σ_I) = *ratio of standard deviation of operating profit growth index of bizownerHQ sector to standard deviation of its aggregate sector*

FIG. 4

$$ATWACC = W_{ld} * R_{bl} * (1 - T) + W_{sd} * R_{bs} * (1 - T) + W_{cs} * R_{cs} + W_{ps} * R_{ps}$$

where:

- $W_{ld}, W_{sd}, W_{cs}, W_{ps}$ = *percentage of capital structure financed with long – term debt, short – term debt, common stock, preferred stock respectively*
- $R_{bl}, R_{bs}, R_{cs}, R_{ps}$ = *cost of long – term debt, short – term debt, common stock, preferred stock respectively*
- T = *combined marginal federal and state income tax rate*

FIG. 5

$$V = V_{ops} + V_{nops} + V_{tax-exempt} + V_{ec\&s}$$

$$MVMCE = V - BV_{debt} - BV_{ps} - BV_{ol}$$

where:

- V = *value of the firm*
- V_{ops} = *value of firm operations*
- V_{nops} = *value of firm non – operating cash flows*
- $V_{tax-exempt}$ = *value of tax – exempt interest*
- $V_{ec\&s}$ = *value of excess cash&securities*
- $MVMCE$ = *market value of minority interest in common equity*
- BV_{debt} = *book value of debt*
- BV_{ps} = *book value of preferred stock*
- BV_{ol} = *book value other liabilities*

FIG.6

Representative Studies That Attempt to Measure the Liquidity Discount

Author(s)	Peer Reviewed Study	Average Discount	Reported Dispersion	Type of Study
William Silber[1]	Yes	35%;	14% for large creditworthy companies; 50% for small firms with negative earnings	Restricted stock study
Michael Hertzel and Richard Smith[2]	Yes	Not Reported	.2%-43.7%	Private Equity Study
John Emory[3]	Yes	47%	Not Specified	Pre-IPO Study
John Koeplin et.al.[4]	Yes	20.39%	Depending on the multiple used, discount varied from 0% discount based on sales revenue to 28.26% using the ratio of Enterprise Value to EBIT	Identified all private firm purchases from 1984 to 1998
Willamette Associates[5]	No	40.1%	Wide dispersion from a premium to a maximum discount of 99%	Pre-IPO Study

FIG. 7

[1] William L. Silber, "Discounts on Restricted Stock: "The Impact of Illiquidity on Stock Prices", *Financial Analyst Journal*, July-August 1991, pp. 60 –64.

[2] Michael Hertzel and Richard L. Smith, "Market Discounts and Shareholder Gains for Placing Equity Privately", *Journal of Finance*, June 1993, pp. 459-485.

[3] John D. Emory, "The Value of Marketability as Illustrated in Initial Public Offerings of Common Stock- February 1992 through July 1993", *Business Valuation Review*, March 1994, pp 3-7.

[4] John Koeplin, Atulya Sarin and Alan C. Shapiro, "The Private Company Discount", *Journal of Applied Corporate Finance*, Volume 12 Number 4, Winter 2000, pp 94-101.

[5] Steven D. Garber and Jeffrey A. Herbst, "Discounts for Lack of Marketability- Empirical Evidence Related to Pre-IPO Pricing", Chapter 4, *The Handbook of Advanced Business Valuation*, 81-96.

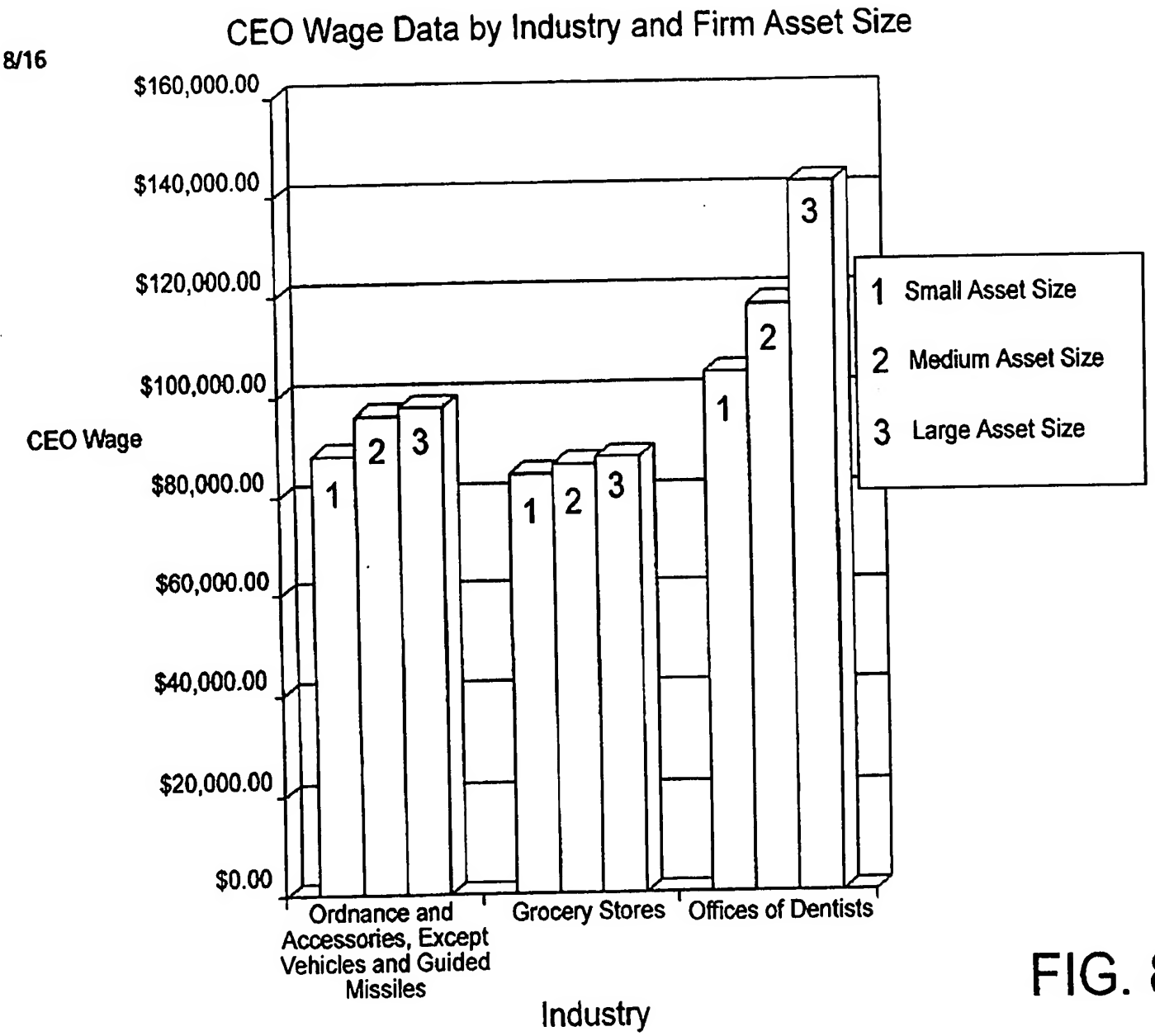
CEO Wage Data by Industry and Firm Asset Size
$160,000.00
$140,000.00
$120,000.00
$100,000.00
$80,000.00
$60,000.00
$40,000.00
$20,000.00
$0.00
CEO Wage
1
2
3
1
2
3
1
2
3
1 Small Asset Size
2 Medium Asset Size
3 Large Asset Size
Ordnance and Accessories, Except Vehicles and Guided Missiles
Grocery Stores
Offices of Dentists
Industry

FIG. 8

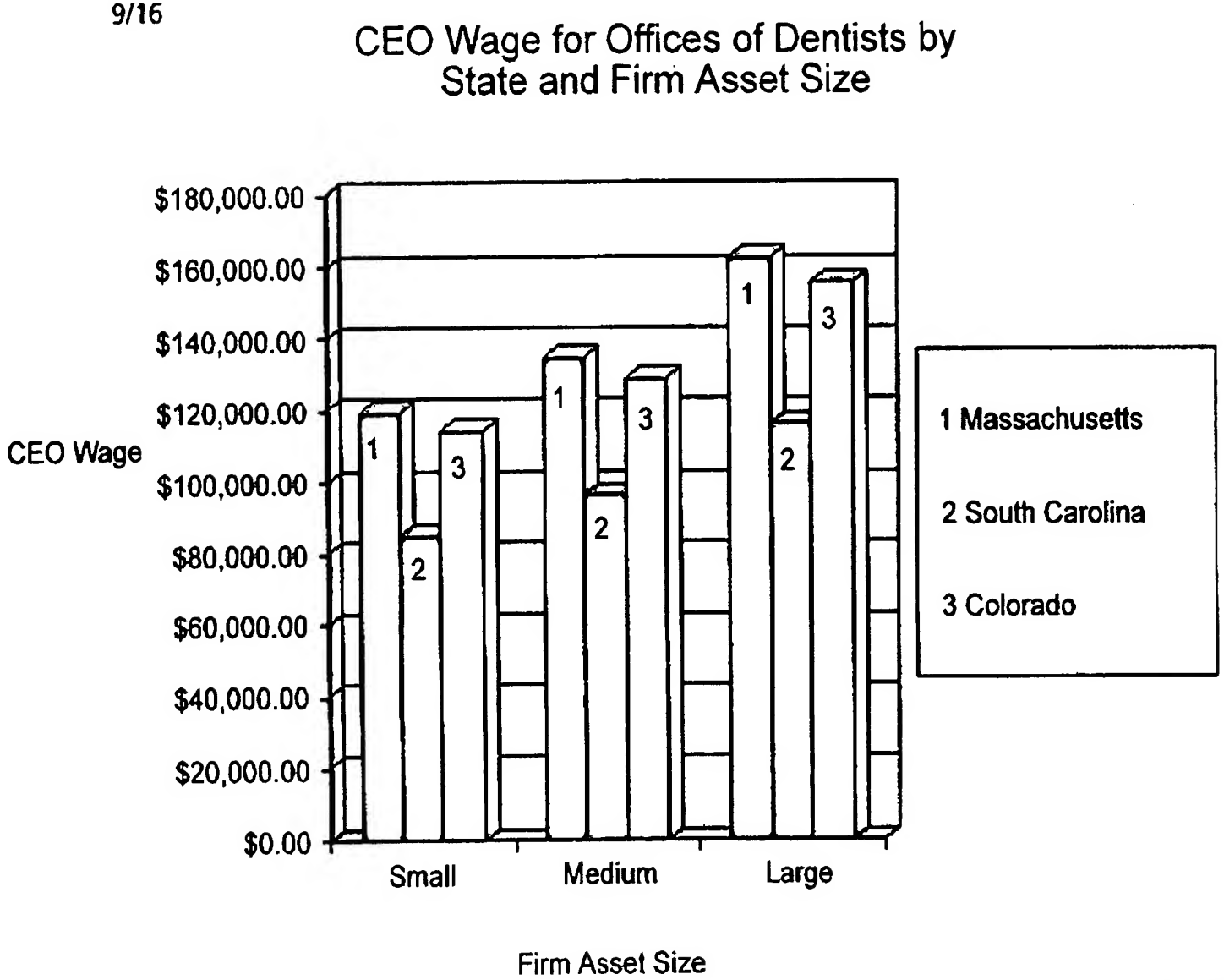
CEO Wage for Offices of Dentists by State and Firm Asset Size
$180,000.00
$160,000.00
$140,000.00
$120,000.00
$100,000.00
$80,000.00
$60,000.00
$40,000.00
$20,000.00
$0.00
CEO Wage
1
2
3
1
2
3
1
2
3
Small
Medium
Large
Firm Asset Size
1 Massachusetts
2 South Carolina
3 Colorado

FIG. 9

Year	# of Transactions	Historical Control Premiums: Median Values, %
1998	512	30.1
1997	487	27.5
1996	381	27.3
1995	324	29.2
1994	260	35
1993	173	33
1992	142	34.7
1991	137	29.4
1990	175	32
1989	303	29

FIG.10

$$RR_t = E(R_t) + AR_t \qquad (1)$$

$$E(R_t) = R_{ft} + Beta * (R_{mt} - R_{ft}) \qquad (2)$$

$$E(AR_t) = B1 * CP_{capital} + B2 * CP_{synergy} \qquad (2a)$$

where:

- RR_t = ex post control premium: percent change in target firm share price on date of takeover announcement
- AR_t = abnormal return on takeover announcement date
- $E(AR_t)$ = expected value of AR_t prior to announcement date
- $E(R_t)$ = expected daily target firm rate of return on takeover announcement date
- $CP_{capital}$ = control premium due to reduction in cost of capital
- $CP_{synergy}$ = control premium due to synergy value created by acquirer
- B_1, B_2 = relative importance of $CP_{capital}$ & $CP_{synergy}$ respectively
- R_{ft} = expected daily rate of return on 1 year Treasury Bill on takeover announcement date
- $Beta$ = measure of target firm's systematic risk
- R_{mt} = expected daily rate of return on a diversified portfolio of assets on takeover announcement date

FIG. 11

The expected value of the control premium is the defined as:

$$E(AR)_t = [\, P_{aa} - P_{ba} \,] / P_{ba} \qquad (3)$$

$$P_{ba} = CF_b / R_b; \qquad (4)$$

CF_b *is constant level of cash flow before announcement*

$$P_{aa} = CF_b / R_b - \Psi \qquad (5)$$

$\therefore$

$$E(AR)_t = \Psi / R_b - \Psi \qquad (6)$$

$$AR_t = E(AR)_t + \varepsilon_t;\ E(\varepsilon_t) = 0 \qquad (7)$$

FIG.12

$$E(R_{ndt}) = R_{ft} + Beta_{nd} * (R_{mt} - R_{ft}) \quad (8)$$

$$E(R_{dt}) = R_{ft} + Beta_{nd} * (R_{mt} - R_{ft}) * [1 + (D/E) * (1 - T)] \quad (9)$$

where:

- *D/E = debt to equity ratio for target firm*
- *T = combined federal and state marginal tax rate on target frim's business income*

FIG. 13

Control Premium Values Vary with R and g

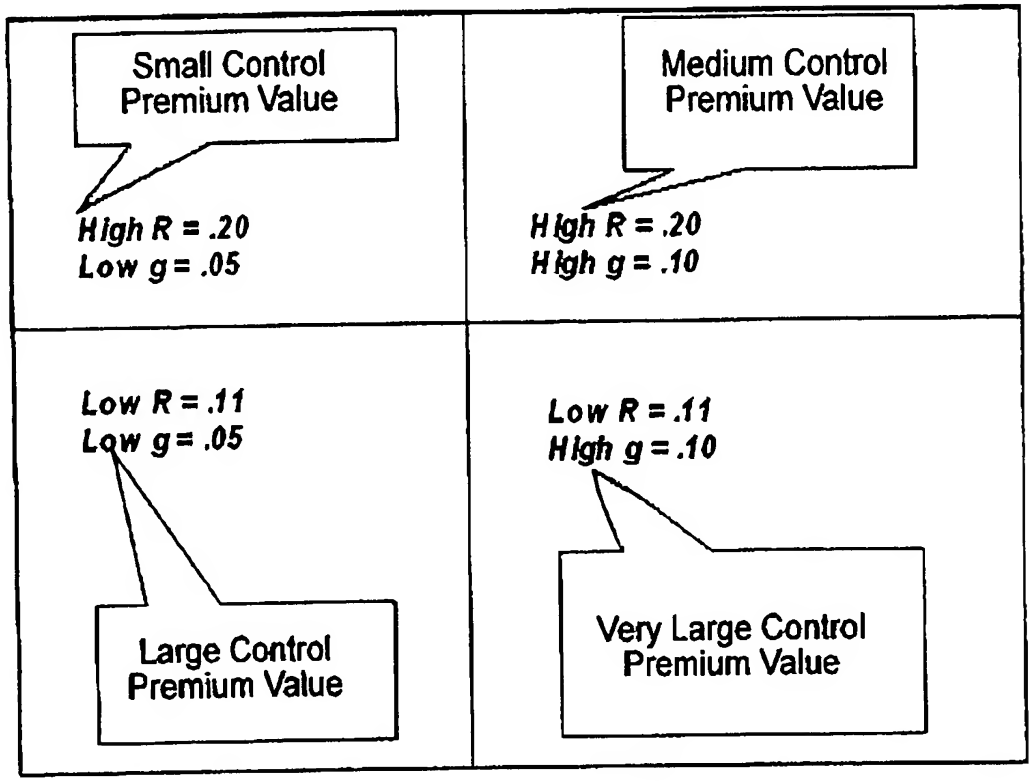

FIG. 14

Control Premium Values for Combinations of the Cost of Capital and Values for Ψ

	0.02	0.025	0.03	0.035	0.04	0.045
Cost of Capital						
0.1	25.00%	33.33%	42.86%	53.85%	66.67%	81.82%
0.11	22.22%	29.41%	37.50%	46.67%	57.14%	69.23%
0.12	20.00%	26.32%	33.33%	41.18%	50.00%	60.00%
0.13	18.18%	23.81%	30.00%	36.84%	44.44%	52.94%
0.14	16.67%	21.74%	27.27%	33.33%	40.00%	47.37%
0.15	15.38%	20.00%	25.00%	30.43%	36.36%	42.86%
0.2	11.11%	14.29%	17.65%	21.21%	25.00%	29.03%
0.25	8.70%	11.11%	13.64%	16.28%	19.05%	21.95%
0.3	7.14%	9.09%	11.11%	13.21%	15.38%	17.65%
0.4	5.26%	6.67%	8.11%	9.59%	11.11%	12.68%
0.5	4.17%	5.26%	6.38%	7.53%	8.70%	9.89%

FIG. 15

$$1+\%OP_i = (1+\%REV_i) * (1+\%OPM_i)$$

$$REV_i = \sum_{i=1}^{n} industry_i + \sum_{j=1}^{k} fd_{ij}$$

$$(1+\%OPM_i) = f_i(x_k)$$

where:

- $1+\%OP_i$ = *growth index of operating profits for industry i*
- $(1+\%REV_i)$ = *growth index of revenue for industry i*
- $(1+\%OPM_i)$ = *growth index of operating profit margin for industy i*
- $industry_i$ = *sales of industry i output to other industries*
- fd_{ij} = *sales of industry i to categories j of final demand; e.g.consumption, investment*
- $f_i(x_k)$ = *variables, x_k, that drive changes in industy i's operating profit margin*

FIG. 16